CHAPTER 7 INSPECT AIRCRAFT USED FOR AIR AMBULANCE

Section 1 Background

1. PTRS ACTIVITY CODES

A. *Maintenance:* 3627/3628

B. *Avionics:* 5627/5628

3. OBJECTIVE. This chapter provides guidance for inspecting FAR Part 91 and 135 aircraft used for air ambulance airplanes, air ambulance helicopters, and Helicopter Hospital Emergency Medical Evacuation Services (HEMES).

5. GENERAL

A. *Background.* Transportation by aircraft of ill or injured persons may have originated during World War I when wounded were transported from battle fronts to field hospitals in an open cockpit biplane. Since that time, the transportation of patients needing medical attention has burgeoned into a significant industry, operating modern aircraft equipped with state-of-the-art medical equipment, carrying thousands of patients each year. The introduction of civil aircraft dedicated exclusively to air ambulance began about 1973. The majority of today's air ambulance services are affiliated with specific hospitals and consequently, many are stationed at sub base type facilities. There are, however, many private, corporate, and on-demand air carrier operators providing non-dedicated aircraft for use. The operators of these aircraft can provide patient care while en route from city to city or from remote sites to urgent care facilities.

B. *Aviation Safety Inspector (ASI) Responsibilities*

(1) It is important that the ASIs become familiar with the type of aircraft to be inspected before performing the inspection.

NOTE: Although the aircraft may appear clean and sanitary, the ASI should be aware that there may be contaminants aboard. The ASI should exercise good judgment and use caution to prevent the possibility of contracting an infectious disease.

(2) Geographic units must coordinate with the Certificate Holding District Office (CHDO) to obtain knowledge of the operator's maintenance procedures and any other items of concern that may surface during routine inspections. In addition, they must transmit all inspection results and necessary recommendations to the district office. The district office should report to the geographic unit regarding any changes implemented as a result of the unit's recommendations.

NOTE: ASIs should not approach an aircraft while in motion or while the engine(s) is/are running, without recognition from the pilot.

(3) This inspection should be performed before the loading or after the unloading of the patient.

NOTE: At all times, the ASI should be aware that the patient may be in a life-threatening condition.

(4) Any discrepancy should be brought immediately to the attention of the pilot-in-command or appropriate maintenance personnel.

C. *Definitions*

(1) *Air ambulance airplane/helicopter* - An aircraft configured for transportation of ambulatory patients or other patients requiring special care including, but not limited to, Basic Life Support (BLS) or Advanced Life Support (ALS). An air ambulance aircraft is equipped with the medical equipment necessary to support these levels of care in flight with trained medical personnel.

(2) *Public aircraft* - An aircraft used only in the service of a government or political subdivision. This includes aircraft that are exclusively leased by a government agency for a period not less than 90 days. This definition does not

include any government-owned aircraft engaged in carrying persons or property for commercial purposes.

(3) *Operator* - The person, partnership, company, etc. who has direct responsibility for the operation of the aircraft

(4) *Medical equipment* - Equipment and supplies used in patient care

(5) *Dedicated aircraft* -Aircraft totally configured to air ambulance operations

NOTE: Dedicated aircraft may be configured for periodic training. Surveillance should be performed on the aircraft's removed equipment and the appropriate maintenance records should reflect this change.

(6) *Non-dedicated aircraft* - Aircraft temporarily configured to air ambulance configuration

(7) *Scene flight* - Flight to unimproved remote locations, accident sites, or disaster areas for the pick-up of patients in life-threatening situations requiring immediate medical care

(8) *Transport flight* - Transport of a stabilized patient to an improved landing area

(9) *Neonatal flight* - Transport of an infant, generally using isolettes (incubator), either in scene flights or transport flights

(10) *Pediatric flight* - Transport of young children, either in scene flights or transport flights

D. *Types of Aircraft.* Because air ambulance is such a varied field, there are many types of air ambulance aircraft, such as fixed wing or rotor wing, single or multiengine, reciprocating or turbine-powered, IFR-equipped, etc.

(1) *Typical aircraft configuration* -Typical air ambulance configurations may include the following items:

(a) *Medical oxygen (gaseous and/or liquid)* - Containers, lines, gauges, regulators, outlets, and other system components

(b) *Vacuum/air systems* - Containers, pumps, regulators, lines, gauges, and outlets

(c) *Litter systems* - Stretchers, mounting bases, pedestals, platforms, and patient restraining devices and shoulder harnesses

(d) *Supplemental lighting* - Spots, floods and emergency

(e) *Search lights (air ambulance helicopters, HEMES)* - Controlled by the pilot for night operations

(f) *Cabin medical supply storage* - Bins, compartments, pouches, underseat drawers, nets, and cabinets

(g) *Cabin mounted medical equipment* - Intravenous bags, portable oxygen, racks, and brackets

(h) *Medical equipment power outlets* - 12 and 24 volts direct current, 115 volts alternating current, inverters, converters, and batteries. The ASI may find an additional external power receptacle, which is dedicated to AC power for the air ambulance equipment.

(i) *Isolettes/balloon pumps* - Mounting and securing systems

(j) *Specialized air ambulance communication equipment* - FM radios, medical dopplers, sirens, public address systems, intercom systems (ICS), and communication from aircraft to ground and/or emergency personnel

(k) *Attendant/medical personnel seats* - Forward and aft facing, side facing, bench-type and individual, fold downs, pivoting seats, reversible seats, and lapbelts and harnesses

(2) *Placards* - Flight manuals and flight manual supplementals. There may be other placards required by the alteration data.

NOTE: Federal Aviation Regulations require that all equipment installed, including portable devices, must be appropriately secured. The supporting structure to which the equipment is to be attached must be designed to restrain all loads up to the ultimate inertia specified in the emergency provisions/emergency landing conditions required by the regulations.

Section 2 Procedures

1. PREREQUISITES AND COORDINATION REQUIREMENTS

A. *Prerequisites*

- Knowledge of the regulatory requirements of FAR Parts 91 and 135
- Successful completion of Airworthiness Inspector's Indoctrination Course for General Aviation and Air Carrier Inspections, or previous equivalent

B. *Coordination.* This task may require coordination with the operator and the Certificate Holding District Office (CHDO).

3. REFERENCES, FORMS, AND JOB AIDS

A. *References*

- FAR Parts 1, 21, 23, 25, 27, 29, 39, 43, 65, and 145
- Advisory Circular 20-42, Hand Fire Extinguisher For Use in Aircraft, as amended
- Advisory Circular 21-25, Modified Seats and Berths Initially Approved Under a TSO, as amended
- Advisory Circular 91-42, Hazards of Rotating Propellers and Helicopter Rotor Blades, as amended
- Advisory Circular 120-27, Aircraft Weight and Balance Control, as amended
- Advisory Circular 135-5, Maintenance Program Approval for Carry-On Oxygen Equipment for Medical Purposes, as amended
- Advisory Circular 135-14, Emergency Medical Services/Helicopter (EMS/H), as amended
- Advisory Circular 135-15, Emergency Medical Services/Airplane (EMS/A), as amended
- DOT/FAA/DS Pamphlet 88-7, Risk Management for Air Ambulance Helicopter Operators, as amended
- DOT/HS 806703, Air Ambulance Guidelines, as amended
- Annual Book of ASTM Standards, Vol 13.01 Medical Devices
- Order 8000.40B, Maintenance of Pressure Cylinders in Use as Aircraft Equipment
- 49 CFR, Section 173

B. *Forms* . None.

C. *Job Aids*

- Vol. 3, Ch. 1, Figure 1-1, Interior Inspection Guidelines
- Vol. 3, Ch. 1, Figure 1-2, Exterior Inspection Guidelines

5. PROCEDURES

A. *Initiate Air Ambulance Ramp Inspection in Accordance with the District Office Work Program*

B. *Prepare For the Inspection*

(1) Select an aircraft to be inspected that will be available for the scheduled inspection.

(2) Determine if any recent problem areas have been identified for that type of aircraft, such as:

- Emergency Airworthiness Directives
- Maintenance and Airworthiness Bulletins
- Out-of-office special requests for problem follow-up

(3) Determine if recent regulatory changes and Airworthiness Directive requirements affect the aircraft to be inspected.

C. *Introduce yourself to the pilot-in-command and/or appropriate maintenance personnel.* Describe the purpose and scope of the inspection.

NOTE: Perform the inspection before the loading or after the unloading of the patient.

D. *Conduct the Exterior Inspection, as Applicable*. Perform this inspection in accordance with Vol. 3, Ch. 1, Figure 1-2. The following items may be found specifically in air ambulance helicopters:

- External lighting
- External oxygen storage containers and servicing points
- External public address components

E. *Perform Interior Inspection, as Applicable.* Perform this inspection in accordance with Vol. 3, Ch. 1, Figure 1-1, with added emphasis placed on the following items, when applicable:

- Medical oxygen (gaseous and/or liquid)
- Vacuum/air systems
- Litter systems
- Supplemental lighting
- Cabin medical supply storage
- Cabin mounted medical equipment
- Medical equipment power outlets
- Isolettes (incubators)/balloon pumps
- Specialized air ambulance communication equipment
- Attendant/medical personnel seats
- Placards

NOTE: Federal Aviation Regulations require that all equipment installed, including portable devices, must be appropriately secured. The supporting structure to which the equipment is to be attached must be designed to restrain all loads up to the ultimate inertia specified in the emergency provisions/emergency landing conditions required by the appropriate regulations.

F. *Examine the Flight/Maintenance Record Entries*

(1) Ensure that all open discrepancies from the previous flight are resolved, per the operator's manual, prior to departure of the aircraft.

(2) Review the flight/maintenance records to determine if repetitive maintenance problems exist that might indicate a trend.

(3) Ensure that all Minimum Equipment List (MEL), items are deferred in accordance with the provisions of the operator's approved MEL.

(a) Review the operator's approved MEL to determine if the conditions, procedures, and placarding

requirements were accomplished to correctly defer specific items.

(b) Note the date when item was first deferred to determine if the max allowed length of deferral was exceeded. This can be accomplished by examining the flight maintenance records, deferred maintenance list, deferred maintenance placards, or stickers.

(4) Ensure that an airworthiness release, flight/maintenance record entry, or appropriate approval for return to service has been made after the completion of maintenance.

(5) Ensure, when available, that the maintenance records contain, for each discrepancy, the following information:

(a) A description of the work performed or reference to acceptable data

(b) Name or other positive identification of person approving the work

(c) Name of person performing work if outside the organization

(6) Ensure that all modifications to the aircraft have been properly documented and accomplished in accordance with approved data, to include as STC, field approval, etc. Ensure that any required flight manual supplements are available to the flight crew.

G. *Debrief the Operator.* Inform the pilot-in-command and/or appropriate maintenance personnel that the inspection has been completed.

Discuss the discrepancies that were found during the inspection.

H. *Examine the Maintenance Record Entries.* Ensure that the operator has recorded all discrepancies noted during this inspection. If time is available, monitor the operator's corrective actions.

I. *Analyze Findings.* Analyze each finding to determine if the discrepancies are the result of improper maintenance and/or inadequate maintenance/inspection procedures.

7. TASK OUTCOMES

A. *File PTRS Transmittal Form*

B. Completion of this task may result in one of the following:

- Satisfactory inspection
- Requirement for a follow-up inspection for a particular discrepancy
- If the inspection was performed by the office having geographic responsibility, submitting of a report of any deficiencies to the Certificate Holding District Office
- Submitting of Enforcement Investigation Report, as applicable

C. *Document Task.* File all supporting paperwork in the operator's office file.

9. FUTURE ACTIVITIES. Schedule follow-up inspection, if applicable.